Prototype-Technology Evaluator and Research Aircraft, Phase II

Completed Technology Project (2013 - 2016)

Project Introduction

The Area-I team has developed and flight tested the unmanned Prototype-Technology Evaluation and Research Aircraft or PTERA ("ptera" being Greek for wing, or wing-like). The PTERA flew successfully during Phase I of this program, and stands to enhance the already capable NASA Aeronautics Test Program (ATP) by enabling the low-cost, low-risk, flight-based evaluation of everything from advanced aerodynamic treatments to control systems and sensor payloads. The PTERA will bridge the gap between wind tunnel testing and manned flight testing to greatly reduce technology development time, cost, and risk. This work seeks to further mature the PTERA system through rigorous flight testing and will begin the integration of the PTERA into the NASA ATP through the delivery of a new PTERA baseline system to NASA. Several core capabilities that the PTERA would bring to the ATP include: 1) A low-cost, low-risk flight test facility that can be used to expand ATP's role in the testing and validation of NASA's physics-based multi-disciplinary analysis and optimization (MDAO) tools 2) The ability to flight test advanced aerodynamic treatments, health management and control systems, and to perform experiments in structures and aeroelasticity for a fraction of the cost of a manned flight test program. 3) The ability to flight test cutting-edge and complex systems whose cost and risk are too high for manned flights. 4) A testbed with modular airframe that enables the evaluation of multiple technologies with the same airframe. 5) A testbed with a large payload capacity that facilitates the inexpensive and risk-mitigating flight test evaluation of a wide array of sensors and payloads as well as the evaluation of flight-test measurement systems before they transition to manned programs. 6) The ability to perform unmanned, autonomous, flight experiments relating to the burgeoning field of autonomous unmanned aircraft, including experiments supporting UAS integration into the NAS.

Prototype-Technology Evaluator and Research Aircraft Project Image

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Small Business Innovation Research/Small Business Tech Transfer

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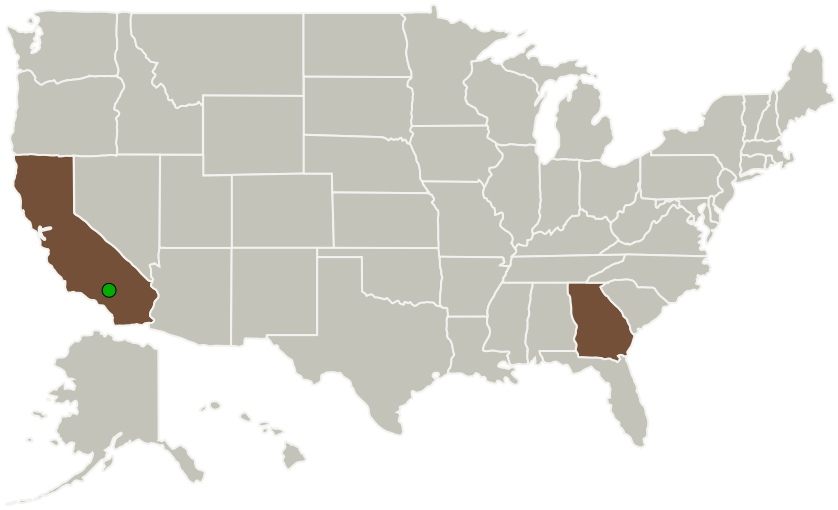
Primary U.S. Work Locations and Key Partners



Organizations Performing Work	Role	Type	Location
Area-I, Inc.	Lead Organization	Industry	Kennesaw, Georgia
Armstrong Flight Research Center(AFRC)	Supporting Organization	NASA Center	Edwards, California

Primary U.S. Work Locations	
California	Georgia

Project Transitions

January 2013: Project Start

January 2016: Closed out

Closeout Documentation:

- Final Summary Chart*(https://techport.nasa.gov/file/137337)*

Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Organization:

Area-I, Inc.

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

Project Management

Program Director:

Jason L Kessler

Program Manager:

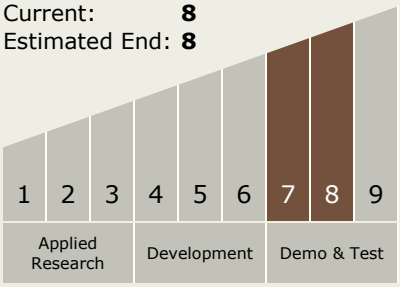
Carlos Torrez

Principal Investigator:

Nicholas R Alley

Technology Maturity (TRL)

Start: **7**
Current: **8**
Estimated End: **8**



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Images

Project Image
Prototype-Technology Evaluator and Research Aircraft Project Image
(https://techport.nasa.gov/image/135006)

Technology Areas

Primary:

- TX15 Flight Vehicle Systems
  - TX15.1 Aerosciences
    - TX15.1.8 Ground and Flight Test Technologies

Target Destinations

The Sun, Earth, The Moon, Mars, Others Inside the Solar System, Outside the Solar System